

REMARKS

Claims 1, 5, 9, 12, 16, 20, 23, 25, 26, 28, 30, 73-77, 79-81, 83-88, 90-94, 96-100, 102-106, 110, 112, 113, 116, 118, 120, 121, 124 and 126 are amended, no claims are canceled, and no claims are added; as a result, claims 1-32, 73-106 and 110-127 are now pending in this application.

§102 Rejection of the Claims

Claims 1-32, 106, and 127 were rejected under 35 USC § 102(b) as being anticipated by Horiike et al. (U.S. Patent No. 5,290,609), hereinafter Horiike.

Claim 1

Notwithstanding the amendment, Applicant respectfully traverses the rejection of claim 1 because the record does not teach all the elements of the claim. Applicant is unable to find in the cited reference, for example, a metal oxide buffer layer intermediate and directly adjoining the dielectric layer and one of the first and second electrodes, as presently recited in claim 1.

Reconsideration and allowance of claim 1 are respectfully requested.

Claims 2-4 and 127

Applicant respectfully submits that claims 2-4 and 127 are patentable at least as dependent claims of patentable base claim 1, and the discussion for claim 1 is repeated in support of the allowability of claims 2-4 and 127.

Reconsideration and allowance of claims 2-4 and 127 are respectfully requested.

Claim 5

Notwithstanding the amendment, Applicant respectfully traverses the rejection of claim 5 because the record does not teach all the elements of the claim. Applicant is unable to find in the cited reference, for example, a tungsten trioxide buffer layer interposed between and directly adjoining the dielectric layer and one of the first and second electrodes, as presently recited in claim 5.

Reconsideration and allowance of claim 5 are respectfully requested.

Claims 6-8

Applicant respectfully submits that claims 6-8 are patentable at least as dependent claims of patentable base claim 5, and the discussion for claim 5 is repeated in support of claims 6-8.

Reconsideration and allowance of claims 6-8 are respectfully requested.

Claim 9

Notwithstanding the amendment, Applicant respectfully traverses the rejection of claim 9 because the record does not teach all the elements of the claim. Applicant is unable to find in the cited reference, for example, a metal oxide buffer layer interposed between and directly adjoining the dielectric layer and one of the first and second electrodes, wherein the metal oxide buffer layer includes a refractory metal, as presently recited in claim 9.

Reconsideration and allowance of claim 9 are respectfully requested.

Claims 10 and 11

Applicant respectfully submits that claims 10 and 11 are patentable at least as dependent claims of patentable base claim 9, and the discussion for claim 9 is repeated in support of claims 10 and 11.

Reconsideration and allowance of claims 10 and 11 are respectfully requested.

Claim 12

Notwithstanding the amendment, Applicant respectfully traverses the rejection of claim 12 because the record does not teach all the elements of the claim. Applicant is unable to find in the cited reference, for example, a metal oxide buffer layer intermediate and directly adjoining the dielectric layer and the bottom electrode, as presently recited in claim 12.

Reconsideration and allowance of claim 12 are respectfully requested.

Claims 13-15

Applicant respectfully submits that claims 13-15 are patentable at least as dependent claims of patentable base claim 12, and the discussion for claim 12 is repeated in support of claims 13-15.

Reconsideration and allowance of claims 13-15 are respectfully requested.

Claim 16

Notwithstanding the amendment, Applicant respectfully traverses the rejection of claim 16 because the record does not teach all the elements of the claim. Applicant is unable to find in the cited reference, for example, a metal oxide buffer layer intermediate and directly adjoining the dielectric layer and the bottom electrode, wherein the metal in the buffer layer is a refractory metal, as presently recited in claim 16.

Reconsideration and allowance of claim 16 are respectfully requested.

Claims 17-19

Applicant respectfully submits that claims 13-15 are patentable at least as dependent claims of patentable base claim 12, and the discussion for claim 12 is repeated in support of claims 13-15.

Reconsideration and allowance of claims 13-15 are respectfully requested.

Claim 20

Notwithstanding the amendment, Applicant respectfully traverses the rejection of claim 20 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find in the cited reference, for example, a metal oxide buffer layer intermediate and directly adjoining the dielectric layer and the bottom electrode, wherein the bottom electrode comprises a metal nitride having a metal component which is the same as the metal component of the metal oxide buffer layer, as presently recited in claim 20.

Furthermore, Applicant respectfully submits the cited reference does not appear to specifically teach a metal oxide buffer layer, wherein the bottom electrode comprises a metal nitride having a metal component which is the same as the metal component of the metal oxide

buffer layer, as recited in claim 20. In other words, the cited reference does not appear to specifically match the metal oxide buffer layer to the adjacent metal nitride electrode or cite the advantageous benefits thereof as recited at p. 9, lines 3-10.

Reconsideration and allowance of claim 20 are respectfully requested.

Claims 21 and 22

Applicant respectfully submits that claims 21 and 22 are patentable at least as dependent claims of patentable base claim 20, and the discussion for claim 20 is repeated in support of claims 21 and 22.

Reconsideration and allowance of claims 21 and 22 are respectfully requested.

Claim 23

Notwithstanding the amendment, Applicant respectfully traverses the rejection of claim 23 because, among other things, the record does not teach all the elements of the claim.

Applicant is unable to find in the cited reference, for example, at least one tungsten oxide buffer layer, wherein each tungsten oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the bottom electrode and the top electrode, as presently recited in claim 23.

Furthermore, Applicant respectfully submits the cited reference does not appear to specifically teach a tungsten oxide buffer layer, and at least one electrode selected from the group consisting of the bottom electrode and the top electrode comprises tungsten nitride, as recited in claim 23. In other words, the cited reference does not appear to specifically match the tungsten oxide buffer layer to the adjacent tungsten nitride electrode or cite the advantageous benefits thereof as recited at p. 9, lines 3-10.

Reconsideration and allowance of claim 23 are respectfully requested.

Claims 24

Applicant respectfully submits that claim 24 is patentable at least as a dependent claim of patentable base claim 23, and the discussion for claim 23 is repeated in support of claim 24.

Reconsideration and allowance of claim 24 are respectfully requested.

Claim 25

Notwithstanding the amendment, Applicant respectfully traverses the rejection of claim 25 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find in the cited reference, for example, at least one tungsten oxide buffer layer, wherein each tungsten oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the bottom electrode and the top electrode, as presently recited in claim 25.

Furthermore, Applicant respectfully submits the cited reference does not appear to specifically teach a tungsten oxide buffer layer, and at least one electrode is selected from the group consisting of the bottom electrode and the top electrode includes tungsten nitride, as recited in claim 25. In other words, the cited reference does not appear to specifically match the tungsten oxide buffer layer to the adjacent tungsten nitride electrode or cite the advantageous benefits thereof as recited at p. 9, lines 3-10.

Reconsideration and allowance of claim 25 are respectfully requested.

Claim 26

Notwithstanding the amendment, Applicant respectfully traverses the rejection of claim 26 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find in the cited reference, for example, a metal oxide buffer layer intermediate and directly adjoining the dielectric layer and one of the first and second electrodes, wherein the metal oxide buffer layer has an orthorhombic crystal structure, as presently recited in claim 26.

Furthermore, Applicant respectfully traverses the rejection of claim 26 because the identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989); MPEP § 2131. As stated above, claim 26 recites a metal oxide buffer layer intermediate and directly adjoining the dielectric layer and one of the first and second electrodes, wherein the metal oxide buffer layer has an orthorhombic crystal structure. In contrast, the cited reference appears to describe a buffer layer 16 comprising a metal oxide, but fails to describe the advantageous

crystal structure, as recited in claim 26. Further, the cited reference, Horiike, appears to describe a buffer layer 16 intermediate the dielectric layer and one of the first and second electrodes, but fails to describe the buffer layer 16 as directly adjoining the dielectric layer and one of the first and second electrodes. Thus, Horiike does not teach the identical invention in as complete detail as claim 26.

Applicant requests clarification of the examiner's use of Li et al. in this anticipation rejection. Applicant is unclear whether the examiner intended the rejection of claim 26 as anticipated under 35 USC 102 or obvious under 35 USC 103 in view of a combination of Horiike and Li et al.

Reconsideration and allowance of claim 26 are respectfully requested.

Claims 27

Applicant respectfully submits that claim 27 is patentable at least as a dependent claim of patentable base claim 26, and the discussion for claim 26 is repeated in support of claim 27.

Reconsideration and allowance of claim 27 are respectfully requested.

Claim 28

Notwithstanding the amendment, Applicant respectfully traverses the rejection of claim 28 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find in the cited reference, for example, an annealed metal oxide buffer layer intermediate and directly adjoining the dielectric layer and the bottom electrode, as presently recited in claim 28.

Furthermore, Applicant respectfully traverses the rejection of claim 28 because the identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989); MPEP § 2131. As stated above, claim 28 recites an annealed metal oxide buffer layer intermediate and directly adjoining the dielectric layer and the bottom electrode. In contrast, the cited reference appears to describe a buffer layer 16 comprising a metal oxide, but fails to describe the advantageous annealed structure, as recited in claim 28. Further, the cited reference, Horiike, appears to describe a buffer layer 16 intermediate the dielectric layer and the bottom electrode,

but fails to describe the buffer layer 16 as directly adjoining the dielectric layer and the bottom electrode. Thus, Horiike does not teach the identical invention in as complete detail as claim 28.

Further still, Applicant respectfully traverses the rejection of claim 28 because Applicant has not claimed the process of making such as *annealing the metal oxide buffer layer*. Final Office Action, p. 8, second full paragraph. Instead, claim 28 recites an *annealed* metal oxide buffer layer intermediate and directly adjoining the dielectric layer and the bottom electrode. An annealed metal oxide buffer layer has advantageous properties, for example, prevention of capacitor leakage, based on its structure as provided in the detailed description. See p. 3, lines 25-26.

Reconsideration and allowance of claim 28 are respectfully requested.

Claims 29

Applicant respectfully submits that claim 29 is patentable at least as a dependent claim of patentable base claim 28, and the discussion for claim 28 is repeated in support of claim 29.

Reconsideration and allowance of claim 29 are respectfully requested.

Claim 30

Notwithstanding the amendment, Applicant respectfully traverses the rejection of claim 30 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find in the cited reference, for example, a metal oxide buffer layer intermediate and directly adjoining the dielectric layer and one of the first and second electrodes, wherein the buffer layer has a dielectric constant greater than the dielectric layer, as presently recited in claim 30.

Furthermore, Applicant is unable to find in the cited reference a *single* compound, dielectric layer interposed between the first electrode and the second electrode, as recited in claim 30. Applicant respectfully submits the cited reference does not appear to teach a single compound dielectric layer. Instead, the cited reference appears to teach a dielectric layer formed from a lamination of layer 17 and layer 16, each of these layers having distinct compounds. See Horiike, col. 7, lines 11-15, and Final Office Action, p. 9, first paragraph.

Reconsideration and allowance of claim 30 are respectfully requested.

Claims 31 and 32

Applicant respectfully submits that claims 31 and 32 are patentable at least as dependent claims of patentable base claim 30, and the discussion for claim 30 is repeated in support of claims 31 and 32.

Reconsideration and allowance of claims 31 and 32 are respectfully requested.

Claim 106

Notwithstanding the amendment, Applicant respectfully traverses the rejection of claim 106 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find in the cited reference, for example, an annealed bottom electrode, as recited in claim 106.

Additionally, Applicant is unable to find in the cited reference an annealed metal oxide buffer layer intermediate and directly adjoining the dielectric layer and the bottom electrode, as presently recited in claim 106.

Furthermore, Applicant respectfully traverses the rejection of claim 106 because the identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989); MPEP § 2131. As stated above, claim 106 recites an annealed bottom electrode and an annealed metal oxide buffer layer intermediate and directly adjoining the dielectric layer and the bottom electrode. In contrast, the cited reference, Horiike, appears to describe a buffer layer 16 comprising a metal oxide and a bottom electrode, but fails to describe the advantageous annealed structure, as recited in claim 106. Further, the cited reference appears to describe a buffer layer 16 intermediate the dielectric layer and the bottom electrode, but fails to describe the buffer layer 16 as directly adjoining the dielectric layer and the bottom electrode. Thus, Horiike does not teach the identical invention in as complete detail as claim 106.

Further still, Applicant respectfully traverses the rejection of claim 106 because Applicant has not claimed the process of making such as *annealing the metal oxide buffer layer*. Final Office Action, p. 8, second full paragraph. Instead, claim 106 recites an *annealed* bottom electrode and an *annealed* metal oxide buffer layer intermediate and directly adjoining the

dielectric layer and the bottom electrode. An annealed metal oxide buffer layer and bottom electrode have advantageous properties, for example, prevention of capacitor leakage, as provided in the detailed description. See p. 3, lines 25-26 and p. 18, lines 23-24.

Reconsideration and allowance of claim 106 are respectfully requested.

§103 Rejection of the Claims

Claims 73-80 were rejected under 35 USC § 103(a) as being unpatentable over Ino (U.S. Patent No. 4,899,203) in view of Horiike et al., hereinafter Ino. Claims 81-87 and 110-117 were rejected under 35 USC § 103(a) as being unpatentable over Yoneda (U.S. Patent No. 5,177,574) in view of Horiike et al., hereinafter Yoneda. Claims 88-93 were rejected under 35 USC § 103(a) as being unpatentable over Chu et al. (U.S. Patent No. 5,856,937) in view of Horiike et al., hereinafter Chu. Claims 94-105 and 118-125 were rejected under 35 USC § 103(a) as being unpatentable over Le et al. (U.S. Patent No. 5,867,444) in view of Horiike et al., hereinafter Le.

Claim 73

Applicant respectfully traverses the rejection of claim 73 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one metal oxide buffer layer interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, as presently recited in claim 73.

Additionally, Applicant respectfully submits the rejection fails to consider claim 73 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the die of Ino with the capacitor of Horiike. Final Office Action, page 10, second paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the

Examiner has not stated why Ino would be in need of such a capacitor. Applicant cannot find any suggestion in Ino to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the semiconductor die of Ino. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent to support the assertion. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Ino describes a capacitor having a first plate electrode 29, a second plate electrode 38, and first and second dielectric films 30, 36. See Figure 2. The cited references teach away from the claimed combination because Ino describes a capacitor without the tantalum oxide layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 73 because the record does not clearly identify a proper motivation to combine Ino and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Ino with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective

reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P.* § 2143.01 and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Ino and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Ino and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 73 are respectfully requested.

Claim 74

Applicant respectfully traverses the rejection of claim 74 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one tungsten oxide buffer layer, wherein each tungsten oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, as presently recited in claim 74.

Additionally, Applicant respectfully submits the rejection fails to consider claim 74 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the die of Ino with the capacitor of Horiike. Final Office Action, page 10, second paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Ino would be in need of such a capacitor. Applicant cannot find any suggestion in Ino to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the semiconductor die of Ino. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent to support the assertion. Alternatively, Applicant

submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Sponnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Ino describes a capacitor having a first plate electrode 29, a second plate electrode 38, and first and second dielectric films 30, 36. See Figure 2. The cited references teach away from the claimed combination because Ino describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 74 because the record does not clearly identify a proper motivation to combine Ino and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Ino with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Ino and Horiike in the manner proposed. Thus, it

appears, the requisite motivation for combining Ino and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 74 are respectfully requested.

Claim 75

Applicant respectfully traverses the rejection of claim 75 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one tungsten oxide buffer layer, wherein each tungsten oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, as presently recited in claim 75.

Applicant also respectfully submits the cited reference does not appear to specifically teach a tungsten oxide buffer layer, and at least one electrode is selected from the group consisting of the first electrode and the second electrode comprises tungsten nitride, as recited in claim 75. In other words, the cited reference does not appear to specifically match the tungsten oxide buffer layer to the adjacent tungsten nitride electrode or cite the advantageous benefits thereof as recited at p. 9, lines 3-10.

Additionally, Applicant respectfully submits the rejection fails to consider claim 75 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the die of Ino with the capacitor of Horiike. Final Office Action, page 10, second paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Ino would be in need of such a capacitor. Applicant cannot find any suggestion in Ino to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the semiconductor die of Ino. Pursuant to MPEP § 2144.03, Applicant traverses the Official

Notice and respectfully requests a patent to support the assertion. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Ino describes a capacitor having a first plate electrode 29, a second plate electrode 38, and first and second dielectric films 30, 36. See Figure 2. The cited references teach away from the claimed combination because Ino describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 75 because the record does not clearly identify a proper motivation to combine Ino and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Ino with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Ino and Horiike in the manner proposed. Thus, it

appears, the requisite motivation for combining Ino and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 75 are respectfully requested.

Claim 76

Applicant respectfully traverses the rejection of claim 76 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, a tungsten oxide buffer layer interposed between and directly adjoining the dielectric layer and the second electrode, as presently recited in claim 76.

Additionally, Applicant respectfully submits the rejection fails to consider claim 76 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the die of Ino with the capacitor of Horiike. Final Office Action, page 10, second paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Ino would be in need of such a capacitor. Applicant cannot find any suggestion in Ino to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the semiconductor die of Ino. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent to support the assertion. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or

would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Ino describes a capacitor having a first plate electrode 29, a second plate electrode 38, and first and second dielectric films 30, 36. See Figure 2. The cited references teach away from the claimed combination because Ino describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 76 because the record does not clearly identify a proper motivation to combine Ino and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Ino with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Ino and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Ino and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 76 are respectfully requested.

Claim 77

Applicant respectfully traverses the rejection of claim 77 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example,

high temperature annealed, tungsten oxide buffer layer is interposed between and directly adjoining the dielectric layer and the second electrode, as presently recited in claim 77.

Applicant also respectfully traverses the rejection of claim 77 because Applicant has not claimed the process of making such as *annealing the metal oxide buffer layer*. Final Office Action, p. 13, first full paragraph. Instead, claim 77 recites a high temperature *annealed*, tungsten oxide buffer layer is interposed between and directly adjoining the dielectric layer and the second electrode. An annealed metal oxide buffer layer has advantageous properties, for example, prevention of capacitor leakage, as provided in the detailed description. See p. 3, lines 25-26.

Additionally, Applicant respectfully submits the rejection fails to consider claim 77 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the die of Ino with the capacitor of Horiike. Final Office Action, page 10, second paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Ino would be in need of such a capacitor. Applicant cannot find any suggestion in Ino to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the semiconductor die of Ino. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent to support the assertion. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or

would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Ino describes a capacitor having a first plate electrode 29, a second plate electrode 38, and first and second dielectric films 30, 36. See Figure 2. The cited references teach away from the claimed combination because Ino describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 77 because the record does not clearly identify a proper motivation to combine Ino and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Ino with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Ino and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Ino and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 77 are respectfully requested.

Claim 78

Applicant respectfully submits that claim 78 is patentable as a dependent claim of patentable base claim 77, and the discussion for claim 77 is repeated in support of claim 78.

Reconsideration and allowance of claim 78 are respectfully requested.

Claim 79

Applicant respectfully traverses the rejection of claim 79 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, a metal oxide buffer layer is interposed between and directly adjoining the dielectric layer and the second electrode, wherein the buffer layer has an orthorhombic crystal lattice structure, as presently recited in claim 79.

Applicant also respectfully submits the cited reference does not appear to specifically teach a buffer layer having an orthorhombic crystal lattice structure, as recited in claim 79. In contrast, the cited reference appears to describe a buffer layer 16 comprising a metal oxide, but fails to describe the advantageous crystal structure, as recited in claim 77 and in the specification at p. 18, lines 3-7.

Additionally, Applicant respectfully submits the rejection fails to consider claim 79 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the die of Ino with the capacitor of Horiike. Final Office Action, page 15, second paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Ino would be in need of such a capacitor. Applicant cannot find any suggestion in Ino to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the semiconductor die of Ino. Applicant also submits the Examiner appears to have taken Official Notice regarding the use of tungsten oxide formed with an orthorhombic crystal lattice structure. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent combinable with the above references to support the assertions. Alternatively,

Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Sponnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Ino describes a capacitor having a first plate electrode 29, a second plate electrode 38, and first and second dielectric films 30, 36. See Figure 2. The cited references teach away from the claimed combination because Ino describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 79 because the record does not clearly identify a proper motivation to combine Ino and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Ino with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Ino and Horiike in the manner proposed. Thus, it

appears, the requisite motivation for combining Ino and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 79 are respectfully requested.

Claim 80

Applicant respectfully traverses the rejection of claim 80 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, a metal oxide buffer layer is interposed between and directly adjoining the dielectric layer and the second electrode, wherein the buffer layer has a dielectric constant greater than the dielectric layer, as presently recited in claim 80.

Applicant is also unable to find in the cited reference a *single* compound, dielectric layer interposed between the first electrode and the second electrode, as recited in claim 80. Applicant respectfully submits the cited reference does not appear to teach a single compound dielectric layer. Instead, the cited reference appears to teach a dielectric layer formed from a lamination of layer 17 and layer 16, each of these layers having distinct compounds. See Horiike, col. 7, lines 11-15, and Final Office Action, p. 16, first paragraph.

Additionally, Applicant respectfully submits the rejection fails to consider claim 80 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the die of Ino with the capacitor of Horiike. Final Office Action, page 16, first paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Ino would be in need of such a capacitor. Applicant cannot find any suggestion in Ino to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the semiconductor die of Ino. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice

and respectfully requests a patent to support the assertion. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Ino describes a capacitor having a first plate electrode 29, a second plate electrode 38, and first and second dielectric films 30, 36. See Figure 2. The cited references teach away from the claimed combination because Ino describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 80 because the record does not clearly identify a proper motivation to combine Ino and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Ino with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Ino and Horiike in the manner proposed. Thus, it

appears, the requisite motivation for combining Ino and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 80 are respectfully requested.

Claim 81

Applicant respectfully traverses the rejection of claim 81 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one metal oxide buffer layer interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, as presently recited in claim 81.

Additionally, Applicant respectfully submits the rejection fails to consider claim 81 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory device of Yoneda with the capacitor of Horiike. Final Office Action, page 17, first full paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Yoneda would be in need of such a capacitor. Applicant cannot find any suggestion in Yoneda to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory device of Yoneda. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent to support the assertion. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon

reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Yoneda describes a capacitor having a lower electrode 9, an upper plate electrode 11, and a dielectric layer 10. See Figure 1. The cited references teach away from the claimed combination because Yoneda describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 81 because the record does not clearly identify a proper motivation to combine Yoneda and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Yoneda with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Yoneda and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Yoneda and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 81 are respectfully requested.

Claim 82

Applicant respectfully submits that claim 82 is patentable at least as a dependent claim of patentable base claim 81, and the discussion for claim 81 is repeated in support of claim 82.

Reconsideration and allowance of claim 82 are respectfully requested.

Claim 83

Applicant respectfully traverses the rejection of claim 83 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one tungsten oxide buffer layer, wherein each tungsten oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, as presently recited in claim 83.

Additionally, Applicant respectfully submits the rejection fails to consider claim 83 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory device of Yoneda with the capacitor of Horiike. Final Office Action, page 18, first full paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious.

Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Yoneda would be in need of such a capacitor. Applicant cannot find any suggestion in Yoneda to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory device of Yoneda. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent to support the assertion. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Yoneda describes a capacitor having a lower electrode 9, an upper plate electrode 11, and a dielectric layer 10. See Figure 1. The cited references teach away from the claimed combination because Yoneda describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 83 because the record does not clearly identify a proper motivation to combine Yoneda and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Yoneda with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Yoneda and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Yoneda and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 83 are respectfully requested.

Claim 84

Applicant respectfully traverses the rejection of claim 84 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one tungsten oxide buffer layer, wherein each tungsten oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, as presently recited in claim 84.

Applicant also respectfully submits the cited reference does not appear to specifically teach a tungsten oxide buffer layer, and at least one electrode is selected from the group consisting of the first electrode and the second electrode comprises tungsten nitride, as recited in claim 84. In other words, the cited reference does not appear to specifically match the tungsten oxide buffer layer to the adjacent tungsten nitride electrode or cite the advantageous benefits thereof as recited at p. 9, lines 3-10.

Additionally, Applicant respectfully submits the rejection fails to consider claim 84 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory device of Yoneda with the capacitor of Horiike. Final Office Action, page 19, first full paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious.

Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction.

Furthermore, the Examiner has not stated why Yoneda would be in need of such a capacitor. Applicant cannot find any suggestion in Yoneda to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory device of Yoneda. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent to support the assertion. Alternatively, Applicant submits the assertions made are unsupported by the

references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Sponnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Yoneda describes a capacitor having a lower electrode 9, an upper plate electrode 11, and a dielectric layer 10. See Figure 1. The cited references teach away from the claimed combination because Yoneda describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 84 because the record does not clearly identify a proper motivation to combine Yoneda and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Yoneda with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Yoneda and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Yoneda and

Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 84 are respectfully requested.

Claim 85

Applicant respectfully traverses the rejection of claim 85 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one metal oxide buffer layer interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, the buffer layer having an orthorhombic crystalline structure, as presently recited in claim 85.

Applicant also respectfully submits the cited reference does not appear to specifically teach a buffer layer having an orthorhombic crystalline structure, as recited in claim 85. In contrast, the cited reference appears to describe a buffer layer 16 comprising a metal oxide, but fails to describe the advantageous crystal structure, as recited in claim 85 and in the specification at p. 18, lines 3-7.

Additionally, Applicant respectfully submits the rejection fails to consider claim 85 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory device of Yoneda with the capacitor of Horiike. Final Office Action, page 20, first full paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Yoneda would be in need of such a capacitor. Applicant cannot find any suggestion in Yoneda to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory device of Yoneda. Applicant also submits the

Examiner appears to have taken Official Notice regarding the use of metal oxide formed with an orthorhombic crystalline structure. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent combinable with the above references to support the assertions. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent to support the assertion. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Yoneda describes a capacitor having a lower electrode 9, an upper plate electrode 11, and a dielectric layer 10. See Figure 1. The cited references teach away from the claimed combination because Yoneda describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 85 because the record does not clearly identify a proper motivation to combine Yoneda and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Yoneda with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is

within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Yoneda and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Yoneda and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 85 are respectfully requested.

Claim 86

Applicant respectfully traverses the rejection of claim 86 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one metal oxide buffer layer interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, the buffer layer having a dielectric constant greater than the dielectric layer, as presently recited in claim 86.

Applicant is also unable to find in the cited reference a *single* compound, dielectric layer interposed between the first electrode and the second electrode, as recited in claim 80. Applicant respectfully submits the cited reference does not appear to teach a single compound dielectric layer. Instead, the cited reference appears to teach a dielectric layer formed from a lamination of layer 17 and layer 16, each of these layers having distinct compounds. See Horiike, col. 7, lines 11-15, and Final Office Action, p. 21, first paragraph.

Additionally, Applicant respectfully submits the rejection fails to consider claim 86 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory device of Yoneda with the capacitor of Horiike. Final Office Action, p. 21-22, last to first paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v.*

Feil, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Yoneda would be in need of such a capacitor. Applicant cannot find any suggestion in Yoneda to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory device of Yoneda. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent to support the assertion. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Sponnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Yoneda describes a capacitor having a lower electrode 9, an upper plate electrode 11, and a dielectric layer 10. See Figure 1. The cited references teach away from the claimed combination because Yoneda describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 86 because the record does not clearly identify a proper motivation to combine Yoneda and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Yoneda with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were

individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P.* § 2143.01 and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Yoneda and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Yoneda and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 86 are respectfully requested.

Claim 87

Applicant respectfully traverses the rejection of claim 87 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one, high temperature annealed, metal oxide buffer layer interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, as presently recited in claim 87.

Applicant also respectfully traverses the rejection of claim 87 because Applicant has not claimed the process of making such as *annealing the metal oxide buffer layer*. Final Office Action, p. 22, first full paragraph. Instead, claim 87 recites a high temperature *annealed*, metal oxide buffer layer interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode. An annealed metal oxide buffer layer has advantageous properties, for example, prevention of capacitor leakage, as provided in the detailed description. See p. 3, lines 25-26.

Additionally, Applicant respectfully submits the rejection fails to consider claim 87 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory device of Yoneda with the capacitor of Horiike. Final Office Action, p. 22-23, last to first paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious.

Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Yoneda would be in need of such a capacitor. Applicant cannot find any suggestion in Yoneda to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory device of Yoneda. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent to support the assertion. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Yoneda describes a capacitor having a lower electrode 9, an upper plate electrode 11, and a dielectric layer 10. See Figure 1. The cited references teach away from the claimed combination because Yoneda describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 87 because the record does not clearly identify a proper motivation to combine Yoneda and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Yoneda with Horiike. Alternatively,

pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Yoneda and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Yoneda and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 87 are respectfully requested.

Claim 88

Applicant respectfully traverses the rejection of claim 88 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one metal oxide buffer layer, wherein each metal oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, as presently recited in claim 88.

Additionally, Applicant respectfully submits the rejection fails to consider claim 88 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory module of Chu with the capacitor of Horiike. Final Office Action, p. 24, first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Chu would be in need of such a capacitor.

Applicant cannot find any suggestion in Chu to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory device of Chu. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent to support the assertion. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Sponnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Chu describes a capacitor having a top plate 76, and fiberglass insulating layers 90, 92 and 94. See Figure 6. The cited references teach away from the claimed combination because Chu describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 88 because the record does not clearly identify a proper motivation to combine Chu and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Chu with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not

establish legally sufficient motivation to combine references. See *M.P.E.P.* § 2143.01 and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Chu and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Chu and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 88 are respectfully requested.

Claim 89

Applicant respectfully submits that claim 89 is patentable at least as a dependent claim of patentable base claim 88, and the discussion for claim 88 is repeated in support of claim 89.

Reconsideration and allowance of claim 89 are respectfully requested.

Claim 90

Applicant respectfully traverses the rejection of claim 90 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one tungsten oxide buffer layer, wherein each tungsten oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, as presently recited in claim 90.

Additionally, Applicant respectfully submits the rejection fails to consider claim 90 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory module of Chu with the capacitor of Horiike. Final Office Action, p. 25, first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious.

Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Chu would be in need of such a capacitor.

Applicant cannot find any suggestion in Chu to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory device of Chu. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent to support the assertion. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Chu describes a capacitor having a top plate 76, and fiberglass insulating layers 90, 92 and 94. See Figure 6. The cited references teach away from the claimed combination because Chu describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 90 because the record does not clearly identify a proper motivation to combine Chu and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Chu with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not

establish legally sufficient motivation to combine references. See *M.P.E.P.* § 2143.01 and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Chu and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Chu and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 90 are respectfully requested.

Claim 91

Applicant respectfully traverses the rejection of claim 91 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one tungsten oxide buffer layer, wherein each tungsten oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, the buffer layer having a dielectric constant greater than the dielectric layer, as presently recited in claim 91.

Applicant is also unable to find in the cited reference a *single* compound, dielectric layer interposed between the first electrode and the second electrode, as recited in claim 91. Applicant respectfully submits the cited reference does not appear to teach a single compound dielectric layer. Instead, the cited reference appears to teach a dielectric layer formed from a lamination of layer 17 and layer 16, each of these layers having distinct compounds. See Horiike, col. 7, lines 11-15, and Final Office Action, p. 26, first partial paragraph.

Additionally, Applicant respectfully submits the rejection fails to consider claim 91 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory module of Chu with the capacitor of Horiike. Final Office Action, p. 26, first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious.

Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to

consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Chu would be in need of such a capacitor. Applicant cannot find any suggestion in Chu to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory device of Chu. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent to support the assertion. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Chu describes a capacitor having a top plate 76, and fiberglass insulating layers 90, 92 and 94. See Figure 6. The cited references teach away from the claimed combination because Chu describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 91 because the record does not clearly identify a proper motivation to combine Chu and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Chu with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness

without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P.* § 2143.01 and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Chu and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Chu and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 91 are respectfully requested.

Claim 92

Applicant respectfully traverses the rejection of claim 92 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one metal oxide buffer layer, wherein each metal oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, the buffer layer having an orthorhombic crystalline structure, as presently recited in claim 92.

Applicant also respectfully submits the cited reference does not appear to specifically teach a buffer layer having an orthorhombic crystalline structure, as recited in claim 92. In contrast, the cited reference appears to describe a buffer layer 16 comprising a metal oxide, but fails to describe the advantageous crystal structure, as recited in claim 92 and in the specification at p. 18, lines 3-7.

Additionally, Applicant respectfully submits the rejection fails to consider claim 92 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory module of Chu with the capacitor of Horiike. Final Office Action, p. 27, first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious.

Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v.*

Feil, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Chu would be in need of such a capacitor. Applicant cannot find any suggestion in Chu to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory device of Chu. Applicant also submits the Examiner appears to have taken Official Notice regarding the use of metal oxide formed with an orthorhombic crystalline structure. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent combinable with the references to support the assertions. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Chu describes a capacitor having a top plate 76, and fiberglass insulating layers 90, 92 and 94. See Figure 6. The cited references teach away from the claimed combination because Chu describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 92 because the record does not clearly identify a proper motivation to combine Chu and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Chu with Horiike. Alternatively, pursuant to

M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Chu and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Chu and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 92 are respectfully requested.

Claim 93

Applicant respectfully traverses the rejection of claim 93 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one, high temperature annealed metal oxide buffer layer, wherein each metal oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, as presently recited in claim 93.

Applicant also respectfully traverses the rejection of claim 93 because Applicant has not claimed the process of making such as *annealing the metal oxide buffer layer*. Final Office Action, p. 28, first paragraph. Instead, claim 93 recites a high temperature *annealed*, metal oxide buffer layer interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode. An annealed metal oxide buffer layer has advantageous properties, for example, prevention of capacitor leakage, as provided in the detailed description. See p. 3, lines 25-26.

Additionally, Applicant respectfully submits the rejection fails to consider claim 93 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory module of Chu with the capacitor of Horiike. Final Office

Action, p. 28-29, first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Chu would be in need of such a capacitor. Applicant cannot find any suggestion in Chu to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory device of Chu. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent reference to support the assertions. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Chu describes a capacitor having a top plate 76, and fiberglass insulating layers 90, 92 and 94. See Figure 6. The cited references teach away from the claimed combination because Chu describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 93 because the record does not clearly identify a proper motivation to combine Chu and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been

from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Chu with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Chu and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Chu and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 93 are respectfully requested.

Claim 94

Applicant respectfully traverses the rejection of claim 94 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one metal oxide buffer layer, wherein each metal oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, as presently recited in claim 94.

Additionally, Applicant respectfully submits the rejection fails to consider claim 94 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory system of Le with the capacitor of Horiike. Final Office Action, p. 29, first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious.

Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v.*

Feil, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Le would be in need of such a capacitor. Applicant cannot find any suggestion in Le to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory system of Le. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent reference to support the assertions. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Further still, Applicant respectfully traverses the rejection of claim 94 because the record does not clearly identify a proper motivation to combine Le and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Le with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Le and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Le and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 94 are respectfully requested.

Claim 95

Applicant respectfully submits that claim 95 is patentable at least as a dependent claim of patentable base claim 94, and the discussion for claim 94 is repeated in support of claim 95.

Reconsideration and allowance of claim 95 are respectfully requested.

Claim 96

Applicant respectfully traverses the rejection of claim 96 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one tungsten oxide buffer layer, wherein each tungsten oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, as presently recited in claim 96.

Additionally, Applicant respectfully submits the rejection fails to consider claim 96 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory system of Le with the capacitor of Horiike. Final Office Action, p. 31, first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Le would be in need of such a capacitor. Applicant cannot find any suggestion in Le to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory system of Le. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent reference to support the assertions. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Further still, Applicant respectfully traverses the rejection of claim 96 because the record does not clearly identify a proper motivation to combine Le and Horiike. Applicant respectfully

requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Le with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Le and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Le and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 96 are respectfully requested.

Claim 97

Applicant respectfully traverses the rejection of claim 97 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one metal oxide buffer layer, wherein each metal oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, the buffer layer having an orthorhombic crystalline structure, as presently recited in claim 97.

Applicant also respectfully submits the cited reference does not appear to specifically teach a buffer layer having an orthorhombic crystalline structure, as recited in claim 97. In contrast, the cited reference appears to describe a buffer layer 16 comprising a metal oxide, but fails to describe the advantageous crystal structure, as recited in claim 97 and in the specification at p. 18, lines 3-7.

Additionally, Applicant respectfully submits the rejection fails to consider claim 97 as a whole. For example, the Examiner states it would have been obvious to one having ordinary

skill in the art to form the memory system of Le with the capacitor of Horiike. Final Office Action, p. 32, first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Le would be in need of such a capacitor. Applicant cannot find any suggestion in Le to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory system of Le. Applicant also submits the Examiner appears to have taken Official Notice regarding the use of a buffer layer formed with an orthorhombic crystalline structure. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a reference combinable with the cited references to support the assertions. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Further still, Applicant respectfully traverses the rejection of claim 97 because the record does not clearly identify a proper motivation to combine Le and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Le with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d

1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Le and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Le and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 97 are respectfully requested.

Claim 98

Applicant respectfully traverses the rejection of claim 98 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one metal oxide buffer layer, wherein each metal oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, the buffer layer having a dielectric constant greater than the dielectric layer, as presently recited in claim 98.

Applicant is also unable to find in the cited reference a *single* compound, dielectric layer interposed between the first electrode and the second electrode, as recited in claim 98. Applicant respectfully submits the cited reference does not appear to teach a single compound dielectric layer. Instead, the cited reference appears to teach a dielectric layer formed from a lamination of layer 17 and layer 16, each of these layers having distinct compounds. See Horiike, col. 7, lines 11-15, and Final Office Action, p. 33, first partial paragraph.

Additionally, Applicant respectfully submits the rejection fails to consider claim 98 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory system of Le with the capacitor of Horiike. Final Office Action, p. 33, first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious.

Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Le would be in need of such a capacitor.

Applicant cannot find any suggestion in Le to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory system of Le. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent reference to support the assertions. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Le describes a memory system and does not appear to detail a capacitor. The cited references teach away from the claimed combination because Horiike describes a capacitor having a buffer layer and Le only describes a memory system, not a capacitor.

Further still, Applicant respectfully traverses the rejection of claim 98 because the record does not clearly identify a proper motivation to combine Le and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Le with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient

motivation to combine references. See *M.P.E.P.* § 2143.01 and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Le and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Le and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 98 are respectfully requested.

Claim 99

Applicant respectfully traverses the rejection of claim 99 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one, high temperature annealed metal oxide buffer layer, wherein each metal oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, as presently recited in claim 99.

Applicant also respectfully traverses the rejection of claim 99 because Applicant has not claimed the process of making such as *annealing the metal oxide buffer layer*. Final Office Action, p. 33, first full paragraph. Instead, claim 99 recites a high temperature *annealed*, metal oxide buffer layer interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode. An annealed metal oxide buffer layer has advantageous properties, for example, prevention of capacitor leakage, as provided in the detailed description. See p. 3, lines 25-26.

Additionally, Applicant respectfully submits the rejection fails to consider claim 99 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory system of Le with the capacitor of Horiike. Final Office Action, p. 34, first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious.

Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to

consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Le would be in need of such a capacitor. Applicant cannot find any suggestion in Le to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory system of Le. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent reference to support the assertions. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Le describes a memory system and does not appear to detail a capacitor. The cited references teach away from the claimed combination because Horiike describes a capacitor having a buffer layer and Le only describes a memory system, not a capacitor.

Further still, Applicant respectfully traverses the rejection of claim 99 because the record does not clearly identify a proper motivation to combine Le and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Le with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective

reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P.* § 2143.01 and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Le and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Le and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 99 are respectfully requested.

Claim 100

Applicant respectfully traverses the rejection of claim 100 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one metal oxide buffer layer, wherein each metal oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, as presently recited in claim 100.

Additionally, Applicant respectfully submits the rejection fails to consider claim 100 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory system of Le with the capacitor of Horiike. Final Office Action, p. 35, first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious.

Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction.

Furthermore, the Examiner has not stated why Le would be in need of such a capacitor.

Applicant cannot find any suggestion in Le to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory system of Le. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent reference to support the

assertions. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Sponnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Le describes a memory system and does not appear to detail a capacitor. The cited references teach away from the claimed combination because Horiike describes a capacitor having a buffer layer and Le only describes a memory system, not a capacitor.

Further still, Applicant respectfully traverses the rejection of claim 100 because the record does not clearly identify a proper motivation to combine Le and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Le with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Le and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Le and Horiike with

the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 100 are respectfully requested.

Claim 101

Applicant respectfully submits that claim 101 is patentable at least as a dependent claim of patentable base claim 100, and the discussion for claim 100 is repeated in support of claim 101.

Reconsideration and allowance of claim 101 are respectfully requested.

Claim 102

Applicant respectfully traverses the rejection of claim 102 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one tungsten oxide buffer layer, wherein each tungsten oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, as presently recited in claim 102.

Additionally, Applicant respectfully submits the rejection fails to consider claim 102 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory system of Le with the capacitor of Horiike. Final Office Action, p. 36, first paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Le would be in need of such a capacitor. Applicant cannot find any suggestion in Le to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory system of Le. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice

and respectfully requests a patent reference to support the assertions. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Le describes a memory system and does not appear to detail a capacitor. The cited references teach away from the claimed combination because Horiike describes a capacitor having a buffer layer and Le only describes a memory system, not a capacitor.

Further still, Applicant respectfully traverses the rejection of claim 102 because the record does not clearly identify a proper motivation to combine Le and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Le with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Le and Horiike in the

manner proposed. Thus, it appears, the requisite motivation for combining Le and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 102 are respectfully requested.

Claim 103

Applicant respectfully traverses the rejection of claim 103 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one metal oxide buffer layer, wherein each metal oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode; wherein the metal oxide buffer layer has an orthorhombic crystalline structure, as presently recited in claim 103.

Applicant also respectfully submits the cited reference does not appear to specifically teach a buffer layer having an orthorhombic crystalline structure, as recited in claim 97. In contrast, the cited reference appears to describe a buffer layer 16 comprising a metal oxide, but fails to describe the advantageous crystal structure, as recited in claim 97 and in the specification at p. 18, lines 3-7.

Additionally, Applicant respectfully submits the rejection fails to consider claim 103 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory system of Le with the capacitor of Horiike. Final Office Action, p. 37-38, first to first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Le would be in need of such a capacitor. Applicant cannot find any suggestion in Le to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a

capacitor of the type in Horiike with the memory system of Le. Applicant also submits the Examiner appears to have taken Official Notice regarding the use of a metal oxide buffer layer formed with an orthorhombic crystalline structure. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a reference combinable with the above references to support the assertions. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Sponnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Le describes a memory system and does not appear to detail a capacitor. The cited references teach away from the claimed combination because Horiike describes a capacitor having a buffer layer and Le only describes a memory system, not a capacitor.

Further still, Applicant respectfully traverses the rejection of claim 103 because the record does not clearly identify a proper motivation to combine Le and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Le with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not

establish legally sufficient motivation to combine references. See *M.P.E.P.* § 2143.01 and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Le and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Le and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 103 are respectfully requested.

Claim 104

Applicant respectfully traverses the rejection of claim 104 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, at least one metal oxide buffer layer, wherein each metal oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode; wherein the metal oxide buffer layer has a dielectric constant greater than the dielectric constant of the dielectric layer, as presently recited in claim 104.

Applicant is also unable to find in the cited reference a *single* compound, dielectric layer interposed between the first electrode and the second electrode, as recited in claim 104. Applicant respectfully submits the cited reference does not appear to teach a single compound dielectric layer. Instead, the cited reference appears to teach a dielectric layer formed from a lamination of layer 17 and layer 16, each of these layers having distinct compounds. See Horiike, col. 7, lines 11-15, and Final Office Action, p. 38-39, first to first partial paragraph.

Additionally, Applicant respectfully submits the rejection fails to consider claim 104 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory system of Le with the capacitor of Horiike. Final Office Action, p. 39, first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious.

Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v.*

Feil, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Le would be in need of such a capacitor. Applicant cannot find any suggestion in Le to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory system of Le. Applicant also submits the Examiner appears to have taken Official Notice regarding the use of a metal oxide buffer layer formed with an orthorhombic crystalline structure. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a reference combinable with the above references to support the assertions. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Le describes a memory system and does not appear to detail a capacitor. The cited references teach away from the claimed combination because Horiike describes a capacitor having a buffer layer and Le only describes a memory system, not a capacitor.

Further still, Applicant respectfully traverses the rejection of claim 104 because the record does not clearly identify a proper motivation to combine Le and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Le with Horiike. Alternatively, pursuant to

M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Le and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Le and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 104 are respectfully requested.

Claim 105

Applicant respectfully traverses the rejection of claim 105 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, a processor, a circuit module, or an at least one, high temperature annealed metal oxide buffer layer, wherein each metal oxide buffer layer is interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode, as presently recited in claim 105.

Applicant also respectfully traverses the rejection of claim 105 because Applicant has not claimed the process of making such as *annealing the metal oxide buffer layer*. Final Office Action, p. 39, first full paragraph. Instead, claim 105 recites a high temperature *annealed*, metal oxide buffer layer interposed between and directly adjoining the dielectric layer and an electrode selected from the group consisting of the first electrode and the second electrode. An annealed metal oxide buffer layer has advantageous properties, for example, prevention of capacitor leakage, as provided in the detailed description. See p. 3, lines 25-26.

Additionally, Applicant respectfully submits the rejection fails to consider claim 105 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the system of Le with the capacitor of Horiike. Final Office Action, p. 40,

first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Le would be in need of such a capacitor. Applicant cannot find any suggestion in Le to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the system of Le. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a reference support the assertions. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Sponnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Le describes a memory system and does not appear to detail a capacitor. The cited references teach away from the claimed combination because Horiike describes a capacitor having a buffer layer and Le only describes a memory system, not a capacitor.

Further still, Applicant respectfully traverses the rejection of claim 105 because the record does not clearly identify a proper motivation to combine Le and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been

from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Le with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P. § 2143.01* and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Le and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Le and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 105 are respectfully requested.

Claim 110

Applicant respectfully traverses the rejection of claim 110 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, a metal oxide buffer layer intermediate and directly adjoining the dielectric layer and one of the first and second electrodes, as presently recited in claim 110.

Additionally, Applicant respectfully submits the rejection fails to consider claim 110 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory cell of Yoneda with the capacitor of Horiike. Final Office Action, page 41, first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to

consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Yoneda would be in need of such a capacitor. Applicant cannot find any suggestion in Yoneda to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory cell of Yoneda. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent to support the assertion. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Yoneda describes a capacitor having a lower electrode 9, an upper plate electrode 11, and a dielectric layer 10. See Figure 1. The cited references teach away from the claimed combination because Yoneda describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 110 because the record does not clearly identify a proper motivation to combine Yoneda and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Yoneda with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness

without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P.* § 2143.01 and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Yoneda and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Yoneda and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 110 is respectfully requested.

Claims 111 and 112

Applicant respectfully submits that claims 111 and 112 are patentable as dependent claims of patentable base claim 110, and the discussion for claim 110 is repeated in support of claims 111 and 112.

Reconsideration and allowance of claims 111 and 112 is respectfully requested.

Claim 113

Applicant respectfully traverses the rejection of claim 113 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, a tungsten trioxide buffer layer interposed between and directly adjoining the dielectric layer and one of the first and second electrodes, as presently recited in claim 113.

Additionally, Applicant respectfully submits the rejection fails to consider claim 113 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory cell of Yoneda with the capacitor of Horiike. Final Office Action, page 42, first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to

consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Yoneda would be in need of such a capacitor. Applicant cannot find any suggestion in Yoneda to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory cell of Yoneda. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent to support the assertion. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Yoneda describes a capacitor having a lower electrode 9, an upper plate electrode 11, and a dielectric layer 10. See Figure 1. The cited references teach away from the claimed combination because Yoneda describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 113 because the record does not clearly identify a proper motivation to combine Yoneda and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Yoneda with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness

without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P.* § 2143.01 and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Yoneda and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Yoneda and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 113 is respectfully requested.

Claims 114 and 115

Applicant respectfully submits that claims 114 and 115 are patentable as dependent claims of patentable base claim 113, and the discussion for claim 113 is repeated in support of claims 114 and 115.

Reconsideration and allowance of claims 114 and 115 is respectfully requested.

Claim 116

Applicant respectfully traverses the rejection of claim 116 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, a metal oxide buffer layer interposed between and directly adjoining the dielectric layer and one of the first and second electrodes, wherein the metal oxide buffer layer includes a refractory metal, as presently recited in claim 116.

Additionally, Applicant respectfully submits the rejection fails to consider claim 116 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the memory cell of Yoneda with the capacitor of Horiike. Final Office Action, page 44, first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v.*

Feil, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Yoneda would be in need of such a capacitor. Applicant cannot find any suggestion in Yoneda to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the memory cell of Yoneda. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a patent to support the assertion. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Sponnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Yoneda describes a capacitor having a lower electrode 9, an upper plate electrode 11, and a dielectric layer 10. See Figure 1. The cited references teach away from the claimed combination because Yoneda describes a capacitor without the buffer layer found in Horiike.

Further still, Applicant respectfully traverses the rejection of claim 116 because the record does not clearly identify a proper motivation to combine Yoneda and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Yoneda with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were

individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P.* § 2143.01 and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Yoneda and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Yoneda and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 116 is respectfully requested.

Claims 117

Applicant respectfully submits that claim 117 is patentable as a dependent claim of patentable base claim 116, and the discussion for claim 116 is repeated in support of claim 117.

Reconsideration and allowance of claims 117 is respectfully requested.

Claim 118

Applicant respectfully traverses the rejection of claim 118 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, a metal oxide buffer layer intermediate and directly adjoining the dielectric layer and one of the first and second electrodes, as presently recited in claim 118.

Additionally, Applicant respectfully submits the rejection fails to consider claim 118 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the system of Le with the capacitor of Horiike. Final Office Action, p. 45, first partial paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the

invention as a whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Le would be in need of such a capacitor. Applicant cannot find any suggestion in Le to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the system of Le. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a reference to support the assertions. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Le describes a memory system and does not appear to detail a capacitor. The cited references teach away from the claimed combination because Horiike describes a capacitor having a buffer layer and Le only describes a memory system, not a capacitor.

Further still, Applicant respectfully traverses the rejection of claim 118 because the record does not clearly identify a proper motivation to combine Le and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Le with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness

without some objective reason to combine the references. The fact that the claimed invention is within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P.* § 2143.01 and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Le and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Le and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 118 is respectfully requested.

Claims 119 and 120

Applicant respectfully submits that claims 119 and 120 are patentable as dependent claims of patentable base claim 118, and the discussion for claim 118 is repeated in support of claims 119 and 120.

Reconsideration and allowance of claims 114 and 115 is respectfully requested.

Claim 121

Applicant respectfully traverses the rejection of claim 121 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, a tungsten trioxide buffer layer interposed between and directly adjoining the dielectric layer and one of the first and second electrodes, as presently recited in claim 121.

Additionally, Applicant respectfully submits the rejection fails to consider claim 121 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the system of Le with the capacitor of Horiike. Final Office Action, p. 46, first paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a

whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Le would be in need of such a capacitor. Applicant cannot find any suggestion in Le to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the system of Le. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a reference to support the assertions. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Le describes a memory system and does not appear to detail a capacitor. The cited references teach away from the claimed combination because Horiike describes a capacitor having a buffer layer and Le only describes a memory system, not a capacitor.

Further still, Applicant respectfully traverses the rejection of claim 121 because the record does not clearly identify a proper motivation to combine Le and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Le with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is

within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P.* § 2143.01 and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Le and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Le and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 121 is respectfully requested.

Claims 122 and 123

Applicant respectfully submits that claims 122 and 123 are patentable as dependent claims of patentable base claim 121, and the discussion for claim 121 is repeated in support of claims 122 and 123.

Reconsideration and allowance of claims 122 and 123 is respectfully requested.

Claim 124

Applicant respectfully traverses the rejection of claim 124 because, among other things, the record does not teach all the elements of the claim. Applicant is unable to find, for example, a metal oxide buffer layer interposed between and directly adjoining the dielectric layer and one of the first and second electrodes, wherein the metal oxide buffer layer includes a refractory metal, as presently recited in claim 124.

Additionally, Applicant respectfully submits the rejection fails to consider claim 124 as a whole. For example, the Examiner states it would have been obvious to one having ordinary skill in the art to form the system of Le with the capacitor of Horiike. Final Office Action, p. 48, first paragraph. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether the claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02. By failing to consider the invention as a

whole, the Final Office Action uses hindsight reconstruction. Furthermore, the Examiner has not stated why Le would be in need of such a capacitor. Applicant cannot find any suggestion in Le to employ such a capacitor. Applicant respectfully submits the Examiner appears to have taken Official Notice regarding the use of a capacitor of the type in Horiike with the system of Le. Pursuant to MPEP § 2144.03, Applicant traverses the Official Notice and respectfully requests a reference to support the assertions. Alternatively, Applicant submits the assertions made are unsupported by the references and therefore are within the personal knowledge of the Examiner. Applicant requests an affidavit supporting the assertions as required by 37 CFR 1.104(d)(2).

Furthermore, it would appear the cited references appear to teach away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the applicant took. *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994); *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966); *In re Spinnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969); *In re Caldwell*, 319 F.2d 254, 256, 138 USPQ 243, 245 (C.C.P.A. 1963). Horiike describes using a capacitor having a dielectric layer 17 interposed between an upper electrode 18 and a lower electrode 15, and a tantalum oxide layer 16. See Figure 2. In contrast, Le describes a memory system and does not appear to detail a capacitor. The cited references teach away from the claimed combination because Horiike describes a capacitor having a buffer layer and Le only describes a memory system, not a capacitor.

Further still, Applicant respectfully traverses the rejection of claim 124 because the record does not clearly identify a proper motivation to combine Le and Horiike. Applicant respectfully requests Examiner clarify the statement, “motivation for doing so would have been from a capacitor with high dielectric constant, rather than a capacitor with increased surface area, which would have complicated structures.” Horiike, col. 2, line 7. Applicant is unclear as to how this statement provides motivation to combine Le with Horiike. Alternatively, pursuant to M.P.E.P. § 2143.01, stating the claimed invention would have been well known in the art because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references. The fact that the claimed invention is

within the capabilities, or considered conventional to one of ordinary skill in the art does not establish legally sufficient motivation to combine references. See *M.P.E.P.* § 2143.01 and see *In Re San Su Lee*, 277 F.3d 1338 (CAFC 2002). Applicant submits that the evidence of record does not appear to identify an objective source for the motivation to combine Le and Horiike in the manner proposed. Thus, it appears, the requisite motivation for combining Le and Horiike with the knowledge of one of skill in the art is lacking, and therefore, proper *prima facie* obviousness has not been established.

Reconsideration and allowance of claim 124 is respectfully requested.

Claims 125

Applicant respectfully submits that claim 125 is patentable as a dependent claim of patentable base claim 124, and the discussion for claim 124 is repeated in support of claim 125.

Reconsideration and allowance of claims 125 is respectfully requested.

Allowable Subject Matter

Claim 126 was objected to as being dependent upon a rejected base claim, but was indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Pursuant to the Examiner's instructions, Applicant has rewritten claim 126 into independent form. Allowance of claim 126 is respectfully requested.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at 612-349-9587 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

SAM YANG

By his Representatives,

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Date 19 June '03

By 

Timothy B Clise
Reg. No. 40,957

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop AF, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 19th day of June, 2003

Amy Moriarty
Name

Amy Moriarty
Signature